

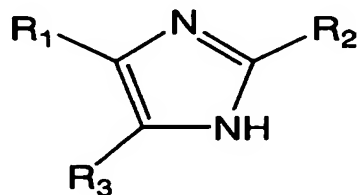
CLAIMS

1. A polishing slurry for metal, comprising an oxidizer, a metal oxide dissolving agent, a metal inhibitor, and water, wherein the metal inhibitor is at least one of a compound having an amino-triazole skeleton and a compound having an imidazole skeleton.

2. The polishing slurry for metal according to claim 1, wherein the compound having the amino-triazole skeleton is a compound wherein an amino group is bonded to carbon in a triazole ring.

3. The polishing slurry for metal according to claim 1 or 2, wherein the compound having the amino-triazole skeleton is 3-amino-1,2,4-triazole.

4. The polishing slurry for metal according to claim 1, wherein the compound having the imidazole skeleton is a compound represented by the following general formula (I):



(I)

wherein R₁, R₂ and R₃ each independently represent a hydrogen atom, an amino group, or a C₁-C₁₂ alkyl chain provided that the case that all of R₁, R₂ and R₃ are hydrogen atoms is excluded.

5. The polishing slurry for metal according to claim 1 or 4, wherein the compound having the imidazole skeleton is at least one selected from the group consisting of 2-methylimidazole, 2-ethylimidazole, 2-(isopropyl)imidazole, 2-propylimidazole, 2-butylimidazole, 4-methylimidazole, 2,4-dimethylimidazole, and 2-ethyl-4-methylimidazole.

6. The polishing slurry for metal according to any one of claims 1 to 5, wherein the metal inhibitor further comprises a compound having a triazole skeleton having no amino group.

7. The polishing slurry for metal according to claim 6, wherein the compound having the triazole skeleton having no amino group is at least one selected from the group consisting of 1,2,3-triazole, 1,2,4-triazole, benzotriazole, and 1-hydroxybenzotriazole.

8. The polishing slurry for metal according to claim 6 or 7, wherein the metal inhibitor comprises: at least one of the compound having the amino-triazole skeleton and the compound having the triazole skeleton having no amino group; and the compound having the imidazole skeleton.

9. The polishing slurry for metal according to any one of claims 6 to 8, wherein the metal inhibitor comprises the compound having the amino-triazole skeleton and the compound having the triazole skeleton having no amino group.

10. The polishing slurry for metal according to any one of claims 1 to 9, further comprising a water-soluble polymer.

11. The polishing slurry for metal according to claim 10,
5 wherein the water-soluble polymer is at least one selected from polysaccharides, polycarboxylic acids, polycarboxylic acid esters, polycarboxylic acid salts, polyacrylamide, and vinyl polymers.

10 12. The polishing slurry for metal according to any one of claims 1 to 11, wherein the oxidizer for metal is at least one selected from the group consisting of hydrogen peroxide, nitric acid, potassium periodate, hypochlorous acid, persulfates, and ozone water.

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13. The polishing slurry for metal according to any one of claims 1 to 12, wherein the metal oxide dissolving agent is at least one selected from the group consisting of organic acids, organic acid esters, ammonium salts of organic acids, and sulfuric
20 acid.

14. The polishing slurry for metal according to any one of claims 1 to 13, further comprising an abrasive.

25 15. The polishing slurry for metal according to any one of claims 1 to 14, wherein a metal film to be polished is at least one selected from the group consisting of copper, copper alloys, copper oxides, oxides of copper alloys, tantalum and compounds

thereof, titanium and compounds thereof, and tungsten and compounds thereof.

16. A method for polishing a metal film by supplying the
5 polishing slurry for metal according to any one of claims 1 to
15 onto a polishing cloth of a polishing table while moving the
polishing table and a substrate having the metal film relatively
in the state that the substrate is pressed against the polishing
cloth.

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17. The polishing method according to claim 16, wherein
the metal film is at least one selected from the group consisting
of copper, copper alloys, copper oxides, oxides of copper alloys,
tantalum and compounds thereof, titanium and compounds thereof,
15 and tungsten and compounds thereof.

18. The polishing method according to claim 16 or 17, wherein
a laminate of two or more metal films is continuously polished.

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19. The polishing method according to claim 18, wherein
a first film which is first polished among the two or more metal
laminated films is one or more selected from copper, copper alloys,
copper oxides, and oxides of copper alloys, and a second film which
is next polished among them is one or more selected from tantalum
25 and compounds thereof, titanium and compounds thereof, and tungsten
and compounds thereof.

20. A polishing method, comprising a first polishing step

of polishing a wiring metal layer of a substrate, the substrate comprising an interlayer insulating film which has a surface consisting of concave portions and convex portions, a barrier layer which covers the interlayer insulating film along the surface thereof, and a wiring metal layer which fills the concave portions to cover the barrier layer, and thereby making the barrier layer at the convex portions exposed, and a second polishing step of polishing at least the barrier layer and the wiring metal layer at the concave portions after the first polishing step, thereby making the interlayer insulating layer at the convex portions exposed, wherein the polishing is performed by use of the polishing slurry for metal according to any one of claims 1 to 15 at least in the second polishing step.